

WHAT IS CLAIMED IS:

1. A method for conducting a perfusion study, said method comprising:

performing an initial full scan of an area of interest in an object; and

performing at least one subsequent partial scan of the area of interest to detect motion of a contrast agent.
2. A method in accordance with Claim 1 wherein said performing at least one subsequent partial scan comprises:

performing a first full rotation including n sub-rotations, where no scanning is performed for all sub-rotations except an i th sub-rotation in which a scan is performed; and

performing a second full rotation including m sub-rotations where no scanning is performed for all sub-rotations except a j th sub-rotation in which a scan is performed.
3. A method in accordance with Claim 2 wherein said performing a second full rotation comprises performing a second full rotation including m sub-rotations where no scanning is performed for all sub-rotations except a j th sub-rotation in which a scan is performed wherein $m = n$, and $j = i$.
4. A method in accordance with Claim 2 wherein said performing a second full rotation comprises performing a second full rotation including m sub-rotations where no scanning is performed for all sub-rotations except a j th sub-rotation in which a scan is performed wherein $m = n$, and $j \neq i$.
5. A method in accordance with Claim 2 wherein said performing a second full rotation comprises performing a second full rotation including m sub-rotations where no scanning is performed for all sub-rotations except a j th sub-rotation in which a scan is performed wherein $m \neq n$, and $j = i$.
6. A method in accordance with Claim 2 wherein said performing a second full rotation comprises performing a second full rotation including m sub-rotations where no

scanning is performed for all sub-rotations except a j th sub-rotation in which a scan is performed wherein $m \neq n$, and $j \neq i$.

7. A method in accordance with Claim 2 further comprising:

collecting projection data from the partial scans;

forming a partial projection dataset from the collected projection data;

interpolating the partial projection data to estimate a complete projection dataset from the partial dataset; and

reconstructing images from the estimated complete projection dataset.

8. A method in accordance with Claim 1 wherein said performing at least one subsequent partial scan comprises:

performing a first full rotation including n view-indexes, where no scanning is performed for all view-indexes except every i th view-index beginning with a view-index q in which a scan is performed; and

performing a second full rotation including m view-indexes where no scanning is performed for all view-indexes except every j th view-index beginning with a view-index r in which a scan is performed.

9. A method in accordance with Claim 8 wherein said performing a second full rotation comprises performing a second full rotation including m view-indexes where no scanning is performed for all view-indexes except every j th view-index beginning with a view-index r in which a scan is performed, wherein $r = q$.

10. A method in accordance with Claim 8 wherein said performing a second full rotation comprises performing a second full rotation including m view-indexes where no scanning is performed for all view-indexes except every j th view-index beginning with a view-index r in which a scan is performed, wherein $r \neq q$.

11. A method in accordance with Claim 8 further comprising:

collecting projection data from the partial scans;

reconstructing at least two images from the collected projection data;

extrapolating an initial guess image based on the at least two images; and

constructing subsequent images based on the extrapolated initial guess image.

12. A Computed Tomography (CT) System comprising:

a radiation source;

a radiation detector; and

a computer coupled to said radiation source and said radiation detector, said computer configured to:

perform an initial full scan of an area of interest in an object; and

perform at least one subsequent partial scan of the area of interest to detect motion of a contrast agent.

13. A system in accordance with Claim 12, wherein said computer further configured to:

perform a first full rotation including n sub-rotations, where no scanning is performed for all sub-rotations except an i th sub-rotation in which a scan is performed; and

perform a second full rotation including m sub-rotations where no scanning is performed for all sub-rotations except a j th sub-rotation in which a scan is performed.

14. A system in accordance with Claim 13 wherein $m = n$ and $j = i$.

15. A system in accordance with Claim 13 wherein $m = n$ and $j \neq i$.

16. A system in accordance with Claim 13 wherein $m \neq n$ and $j = i$.

17. A system in accordance with Claim 13 wherein $m \neq n$ and $j \neq i$.

18. A system in accordance with Claim 12, wherein said computer configured to perform at least one subsequent partial scan comprises a computer configured to:

perform a first full rotation including n view-indexes, where no scanning is performed for all view-indexes except every i th view-index beginning with a view-index q in which a scan is performed; and

perform a second full rotation including m view-indexes where no scanning is performed for all view-indexes except every j th view-index beginning with a view-index r in which a scan is performed.

19. A system in accordance with Claim 18 wherein $r = q$.

20. A system in accordance with Claim 18 wherein $r \neq q$.

21. A computer readable medium encoded with a program configured to instruct a computer to:

perform an initial full scan of an area of interest in an object; and

perform at least one subsequent partial scan of the area of interest to detect motion of a contrast agent.

22. A computer readable medium in accordance with Claim 21 wherein said program further configured to instruct the computer to:

perform a first full rotation including n sub-rotations, where no scanning is performed for all sub-rotations except an i th sub-rotation in which a scan is performed; and

perform a second full rotation including m sub-rotations where no scanning is performed for all sub-rotations except a j th sub-rotation in which a scan is performed.

23. A computer readable medium in accordance with Claim 21 wherein said program further configured to instruct the computer to:

perform a first full rotation including n view-indexes, where no scanning is performed for all view-indexes except every i th view-index beginning with a view-index q in which a scan is performed; and

perform a second full rotation including m view-indexes where no scanning is performed for all view-indexes except every j th view-index beginning with a view-index r in which a scan is performed.